

**LOOK! UP IN THE SKY! IT'S AFFORDABLE AIR SUPPORT!  
CAN UNMANNED AERIAL VEHICLES MAKE AIR SUPPORT  
AVAILABLE TO EVERY LAW ENFORCEMENT AGENCY?**

**by**

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The Command College Futures Study Project is a FUTURES study of a particular emerging issue of relevance to law enforcement. Its purpose is NOT to predict the future; rather, to project a variety of possible scenarios useful for strategic planning in anticipation of the emerging landscape facing policing organizations.

This journal article was created using the futures forecasting process of Command College and its outcomes. Defining the future differs from analyzing the past, because it has not yet happened. In this article, methodologies have been used to discern useful alternatives to enhance the success of planners and leaders in their response to a range of possible future environments.

Managing the future means influencing it—creating, constraining and adapting to emerging trends and events in a way that optimizes the opportunities and minimizes the threats of relevance to the profession.

The views and conclusions expressed in the Command College Futures Project and journal article are those of the author, and are not necessarily those of the CA Commission on Peace Officer Standards and Training (POST).

# **LOOK! UP IN THE SKY! IT'S AFFORDABLE AIR SUPPORT! CAN UNMANNED AERIAL VEHICLES MAKE AIR SUPPORT AVAILABLE TO EVERY LAW ENFORCEMENT AGENCY?**

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Unmanned Aerial Vehicles (UAVs) are an affordable, effective, and flexible alternative to traditional law enforcement aviation programs. Although we have seen their use in the military, little has been done to translate this technology for civilian use. Their benefits, though, merit consideration by agencies faced with rising crime and lowering budgets. Consider the following...

*Granite, California, Saturday, August 12, 2017, 2310 HRS*

Two officers respond to a disturbance at the Granite Motel. A male shouts through the locked door of Room 207 that he will kill everybody if the police do not leave immediately. A woman can be heard sobbing and a baby is screaming. Officers call for backup and then one officer monitors the hallway while the other evacuates motel occupants.

Because room doors are in alcoves and 207 is near the end of the hall, its door facing away from the stairway, a safe, clear view is impossible. Room 210 is inaccessible due to its floor having been removed to install an elevator. SWAT arrives and the commander formulates preliminary plans for entry if negotiations are unsuccessful. The negotiator's repeated attempts to contact the man by telephone are ignored.

The Granite Motel sits alone on the Route 97, with no vantage points for a clear view of the room window. The commander's immediate priorities are (1) officer safety and (2) confirming the number and condition of hostages. Two special unit officers arrive, each carrying

a large plastic case. One follows a SWAT Sergeant to the second floor and sets up at the far end of the hall from 207 (see Figure 1). The other officer sets up beneath the 207's window.

Within moments, a whisper-quiet hovercraft, roughly 18 inches in diameter, hovers in the alcove diagonal from 207; the miniature camera broadcasts a full view of the door to the officer's iPad.

Outside, another hovercraft floats level with 207's window. The curtains are open (but the window is closed and the lights are out), and the infra-red camera provides clear video of the room for the SWAT commander. The vehicle



maintains a back-and-forth pattern just outside the window, providing alternating vantage points that reveal roughly 95 per cent of the room. It is ascertained that the subject is holding a small-caliber semi-automatic pistol in his right hand. A woman, toddler and infant are huddled on the bed. The woman appears to have a bloody nose and swollen left eye.

The subject's adrenaline level has faded, and he slumps in a chair against the wall opposite the window. The camera transmits a view of the subject as his eyes close, his chin settles on his chest, and his chest rises and falls regularly.

The entry team gets into position near the room. The commander wants to wait until the subject is sound asleep, but the woman has been watching too, and gathers her children in her

arms, obviously preparing to make an escape attempt. Realizing that his window of opportunity is closing the commander immediately orders: “GO! GO! GO!”

The entry team, using a key card, enters the room silently, but the woman shrieks when she sees them. The subject awakens, but can’t reach his gun fast enough, and the team overwhelms him, wrestles the gun away, forces him face-down to the carpet, and handcuffs him. The hostages are evacuated to the ER, and the subject is booked for three counts of kidnapping, two counts of endangering the welfare of a child, illegal firearms possession, assault with a deadly weapon, resisting arrest, and other charges. Another successful operation concludes with no loss of life or injuries...

In fact, the UAV provided unique advantages to SWAT at this scene; advantages not available in any other way. Traditional air support would not have been as effective; the real-time transmission of tactical intelligence enabled the commander to order entry at the critical moment. This is just one example of the potential of this tool. Especially in times where more expensive aerial options are

beyond the reach of most police agencies, UAV’s hold great promise.

**UAVs put air support within reach for LEAs of any size.** Only 41 California LEAs operate aviation units, leaving large portions of the state without air support. The more remote a jurisdiction is, the more air support may be necessary. A police officer in a metropolitan area may be less than two to five minutes from backup in case of emergency. A deputy operating in



rural, mountain or wilderness areas could be over an hour away from assistance. Portable air support would enhance officer safety in remote areas.

A helicopter costs between \$500,000 (used, unequipped) and \$3 million (fully loaded). (Wagner, 2007). Maintenance, upkeep, fuel, insurance and personnel costs put any traditional aviation program in the multi-million dollar annual range. Flying time can cost more than \$700 per hour (Venezia, 2011), and fuel expenses are rising. Pilots are usually exclusive to aerial units with no other duties.

A basic UAV surveillance system can cost less than one percent of the cost of a used helicopter. For instance, a Parrot AR Drone Quadricopter (\$300), vertical camera (\$100), a frontal camera (\$50.00), two power supply/charger kits (\$35 each), and a replacement motor (\$40) take care of the costs of the basic UAV. Add an iPad2 (\$540) to control



the Parrot, and a complete UAV surveillance system is possible for around \$1100. Most repairs on a UAV can be performed at a scene. Refueling means fresh batteries every two to three hours. Operators would most likely

have UAV piloting as a collateral duty. Operational costs are essentially acquisition, replacement parts, batteries, overtime or bonus pay and training.

The real bonus with UAVs is spreading air support through every jurisdiction in the state for pennies compared to traditional programs. Traditional units can be supplemented with UAVs

Figure 2- Sample UAV Surveillance System Expense		
Quantity	Item	Price
1	Parrot AR. Drone Quadricopter	\$300
1	Vertical camera	\$100
1	Frontal camera	\$50
2	Charger kits (x \$35)	\$70
1	Replacement motor	\$40
1	iPad	\$540
	<b>Total cost</b>	<b>\$1100</b>

reserving helicopters for night searches, high speed pursuits, long-term surveillance, and major payload or passenger transport. An old adage in the publishing industry is: “I can give you a quality product, fast, at a low-price... pick any two.” UAVs offer all three at once. They also offer an array of significant advantages not available through any other means.

**UAVs have a unique ability to enhance operational safety through nearly silent and invisible real-time intelligence gathering.** The scenario presented the two primary operational advantages to policing available through unmanned aerial vehicles (UAVs): real-time intelligence from multiple vantage points, and enhanced officer safety. The outside UAV offered a vantage point to the scene which would previously have been unavailable without endangering an officer. Close-range video was available to the commander. SWAT was in the best position to enter a hazardous situation and subdue an armed subject.

**UAVs can provide most of the features of traditional aerial platforms, and some additional advantages that traditional programs cannot.** Passenger transport is out of the question. Long distance travel for tailing purposes is not possible (until battery technology improves). Smaller UAVs cannot keep up with a speeding car.

As for the primary selling point for air support- officer safety- UAVs can be *superior* to traditional aircraft because they offer capabilities airplanes and helicopters cannot: stealthy, up-close surveillance from critical vantage points, eavesdropping capacity, portability (little or no runway necessary), convenient parts replacement, and on-site refueling. UAVs are nearly invisible at night due to their small size.

**UAVs are likely a future standard for public safety, although problems will inevitably arise.** British Prime Minister Harold Macmillan (1904-1986) was once asked what represented the greatest challenge for a statesman. Macmillan replied: “Events, my dear boy,

events.” (Bering, 2005) A nominal group technique (NGT) panel identified a number of events with repercussions for UAV deployment as likely to occur in the future. Some were negative. For instance, a UAV crash into apartments could produce a public outcry against their use because of safety concerns. UAV deployment could be ruled unconstitutional on Fourth Amendment grounds. The FAA could rule against allowing public/private use of UAVs in U.S. airspace. Strict Federal and/or State DOJ restrictions could be placed on the technology.

Some events, however, could actually promote UAV use by LEAs. If fuel prices reach five dollars per gallon, police budgets would be directly impacted, and almost any cost-saving alternatives would be considered. If the economy continues its downward spiral, or recovery is sluggish, continued decreases in spending will result in even lower sales tax and property receipts, demanding even deeper cuts in police budgets. One program has already suffered a setback; interestingly, they are looking to UAV’s as a possible solution to come back online.

The Secure Border Initiative Network (SBInet) – an integrated system of personnel, infrastructure, technology, and rapid response capability on the northern and southern land borders- was cancelled by DHS on January 14, 2011. Rick Nelson, Director of the Homeland Security and Counterterrorism Program at the Center for Strategic and International Studies, speculates that DHS may choose to emphasize UAV technologies to make up the gap. (Collins, 2011) UAV successes in immigration control could lead DHS to adopt their deployment as a “best practice.” The NGT panel speculated that it was very likely that DHS may require jurisdictions receiving grants to deploy UAVs as a qualification for funding. Of course, government endorsement is small potatoes compared to the boost UAVs would receive from public enthusiasm.



For instance, a successful motion picture featuring UAVs deployed by young, attractive, heroic police officers could impact the public's perceptions regarding the technology the way *CSI* increased interest in forensics and *NCIS* increased the number of applicants to the Naval Criminal Investigative Service. A positive movie could create a public *expectation* that LEAs use UAVs. A similar positive impact could be made on the public if UAVs are deployed at a major hazmat incident, providing safety intelligence for cleanup workers and the general public.

**LEAs desiring to deploy UAVs should structure a transition from their existing paradigm (no air support at all/ traditional aerial program) to another (UAV air support/UAVs supplement existing air support).** Resistance to UAV deployment may come from within government. LEA executives operating traditional aviation units may fear loss of prestige. Skeptics may regard UAVs as “toys.” City Attorneys’ will worry about possible litigation. District Attorneys will anticipate Fourth Amendment challenges. City Council members will want to avoid controversy. City IT departments will resist more access to Wi-Fi applications or complex technology in the hands of street cops. The community at large will be suspicious of “Big Brother.” Each stakeholder will - consciously or unconsciously – put a price tag on any change, and the price is always personal.

Agencies considering the adoption of UAVs, then, should *transition* toward utilization of UAVs, providing for input from all stakeholders. Strategy should be built from and upon agreement among decision makers and solid subject knowledge. A coherent purpose is vital. Everyone involved in our fictional UAV project at Granite PD can tell you *why* it exists: (1) to *enhance officer safety*; (2) to *increase operational safety and success*; (3) to *increase cost-effectiveness for the Granite Police Department*. The widely publicized corresponding value guiding the program is *to assure respect for personal privacy*. To preserve credibility with the

public, transparent, effective, and public review policies are articulated and executed. We should also capitalize on the public's perspective that their police use the best possible technologies to keep them safe.

**A technically-savvy general public has produced technically-savvy criminals.** UAVs offer police an opportunity to be ahead of the curve. If they do not deploy UAVs expeditiously, LEAs will face a “catch-up” situation like the one they faced when criminal organizations utilized cellular technology for operations long before LEAs realized cell-phones were a critical crime-fighting tool. With cellular affordability came disposability, which gave rise to a new difficulty for using pen registers and wire taps- investigations. Investigators were forced to obtain warrants to wire tap *individuals* instead of *a single phone number*, which took several years for the legal system to sort out. The law cannot keep up with technological development, because technology is so attractive. For lack of a better term, *gadgets are cool*.

An earlier point suggested that a positive, successful movie could influence the public to endorse UAV deployment. Positive depictions of other technologies in media have already changed the culture.



*How William Shatner Changed the World* (Jones, 2006) is a 2006 two-hour television special, hosted and narrated by William Shatner (Captain James T. Kirk on *Star Trek*), and based on his book, *I'm Working on That* (Shatner, 2002). It focuses on technological advancements inspired

by *Star Trek*. For instance, NASA's deep space probe's ion propulsion was inspired by the episode *Spock's Brain*. Martin Cooper claims that *Star Trek*'s communicator device was his inspiration when he invented the cellular phone at Motorola. Ed Roberts invented the first user-friendly computer, the Altair 8800, named after the solar system Altair (Altair 6) in the *Amok Time* episode. *Star Trek* has *already* formed a positive attitude towards technology for every generation since 1966. This attitude has had mixed results for crime fighting.

Criminal elements, especially drug trafficking organizations (DTOs) and money laundering organizations always have advantages over LEAs that cannot be easily overcome. LEAs must operate with policy and procedure, MOUs, unions, limited budgets and civilian and statutory oversight. Criminal organizations, on the other hand, have ultimate flexibility, ruthlessly effective “human resources” models, nearly unlimited finances, and only one rule: “Win.” Their only accountability is to understaffed and ill-equipped law enforcement. (Pennal, 2003) Many large-scale Mexican DTOs have adopted security measures based on terrorist command-control models (Ruzzamenti, 2003) and gather intelligence and conduct counter-surveillance with sophisticated technology. It is conceivable that DTOs will deploy UAVs before LEAs will.

**Police executives can assist with mainstreaming UAVs into public acceptability.**

UAVs will become common and popular for the same reasons personal computers and cell phones have: they're *fun* and *challenging*. UAVs also offer a perception of freedom and control that other technologies do not. Other wireless technologies can be integrated with them, making them visually stimulating to operate.

The U.S. military has partnered with corporations in video game development. With warfare becoming increasingly technological, the military needed to “grow” soldiers with pre-

training techno-war talent and abilities, and video games accomplished that end. (ABC News, 2010) An LEA can do something similar on a local basis by sponsoring a local UAV club. PAL programs could add UAV competitions to their activities.

A tech-savvy Chief Of Police (a UAV hobbyist), UAV Unit Supervisor, etc. could participate in the PAL or club competitions. Police working with kids at public events is always a great human interest story and would probably merit media coverage. The event will seem manipulative if anyone does anything besides play and compete. The point is to make the devices look fun and safe. The more kids like them and play with them, the more acceptable they are. Such an effort could lead to hobbyists volunteering to assist with searches for children or flyovers for traffic accidents or chemical spills, which, if reported by media, could lead to grass-roots support for police UAV deployment.

## **Conclusion**

Law enforcement faces a word that will either loom over it with ominous foreboding or encourage and enable it with a wealth of technological options. The word is *inevitable*.

During most of the last century, an average office worker could get by with one electrical outlet per desk to power a lamp or a fan. In the 1970s, a subtle, incremental revolution began, unnoticed by many. Commercial electricians tasked with rewiring aging buildings to meet increased energy demands noticed, but many business leaders did not. As the new millennium approached and the Y2K scare surfaced, many American businesses were forced to come to grips with their technological dependency. All kinds of businesses realized, all at once, that no matter what industry they were in, electronics now determined success or failure.

Many businesses simply *would not* adapt to technology in their fields for many years. When it finally dawned on them that they no longer had a choice, they found that now they *could*

*not* adapt. Everyone else was too far ahead of them, and they didn't have the savvy, the money, the time, or the wiring to catch up. Industrial and commercial giants closed their doors.

Law enforcement faces a similar choice, brought on by technological availability and economic reality. Planes and helicopters are expensive and limited in application. UAVs are inexpensive and expanding in their applications. Successful criminal organizations stay flexible and adaptable to new realities and opportunities. If law enforcement does not get on this train while it's still in the station, it runs the risk of being the only entity that *isn't* using UAVs.

*Inevitable...*

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Parrot AR.Drone Quadricopter  
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Star Trek Communicator Cell Phone

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Figure 2: Sample UAV Surveillance System Expense

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